

STUDIES ON THE FAUNA OF CURAÇAO AND OTHER
CARIBBEAN ISLANDS: No. 41.

CARIBBEAN LAND MOLLUSCS: VERTIGINIDAE

by

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The area dealt with in this publication requires definition. In order to avoid misunderstanding, its individual components are listed as follows (see Table 1):

Bahamas — Bimini's, Cat Key, New Providence

Lesser Antilles, with the following groups:

Virgin Islands — St. Thomas, St. John, St. Croix

Windward Group — Anguilla and Dog Island, St. Martin and Tintamarre, St.-Barthélemy (= St. Barts) and La Fourche, Saba, St. Eustatius, St. Christopher (= St. Kitts) and Nevis, Barbuda, Antigua, Grenada

Trinidad and Tobago

Leeward Group — Los Testigos, Los Frailes, Margarita with Coche and Cubagua, Los Hermanos, Blanquilla, Tortuga, Orchila, Los Roques, Bonaire, and Klein Bonaire, Klein Curaçao, Curaçao, Aruba

South American mainland — Colombia (La Goajira) and Venezuela (Paraguaná, Dto. Federal, state of Sucre)

With very few exceptions, to be mentioned later, the material upon which this publication is based was gathered by Dr. P. WAGENAAR HUMMELINCK, and I should like to take this opportunity to thank him publicly for the privilege of being allowed to study that portion of his collected material with which I am familiar.

Before starting to list the land molluscs I should point out that, to the best of my knowledge, the fauna, and, in particular, the malacofauna, of that part of the Caribbean surveyed by Dr. HUMMELINCK has never yet been studied as a whole. Only the non-marine molluscs of the West Indian islands have been dealt with in detail, in the Catalogue by THOMAS BLAND, which, antiquated though it now is, was an achievement of capital importance when published in 1862. However, the monographic treatment by HENRY A. PILSBRY, in the *Manual of Conchology*, of most of the families under consideration here embraces lists of all the then known localities of the

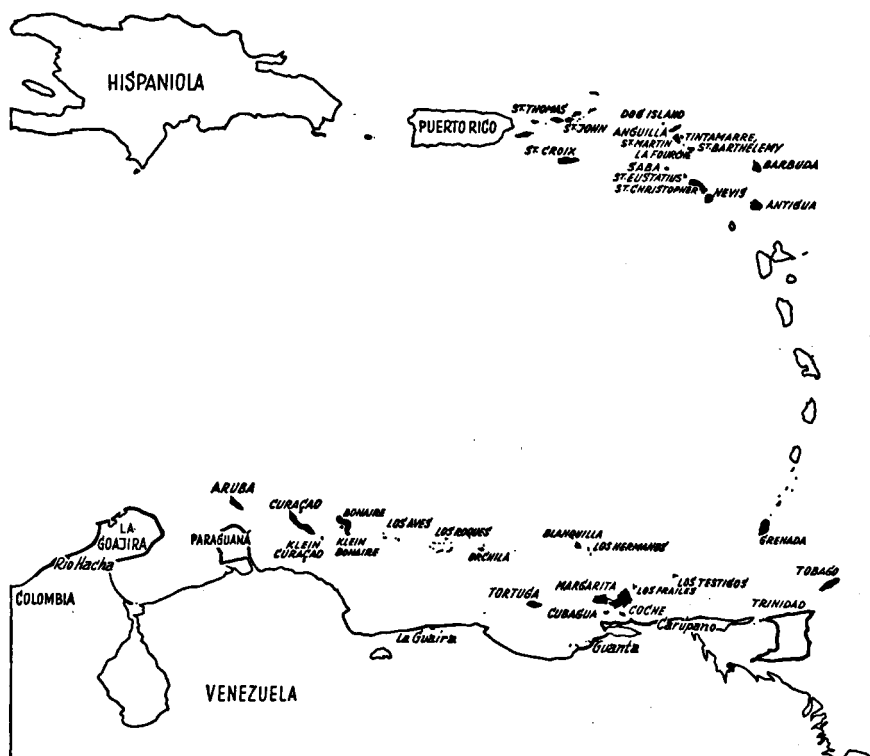


Fig. 1. The localities of the LESSER ANTILLES and the adjacent mainland coast where material of *Vertiginidae* — dealt with in the present paper — has been collected.

TABLE 1

Geographical distribution of *Veriginidae* treated in this paper.

- = new localities
 X = localities already mentioned by Hummelinck (1940), and checked
 □ = localities already mentioned by the same, under a different (sub)species
 ⊗ = localities already mentioned by the same, but not checked
 ○ = localities mentioned by the same, but not checked

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individual species, and these localities include those within the region studied in the present paper. The immensely rich material I have been fortunate enough to study will enable me to add considerably to the list of localities.

The existence of the above-mentioned recent publication has another very great advantage. For it relieves me of the duty of listing the complete synonymy of each species involved, by enabling me to quote only the name with the full synonymic information as presented by PILSBRY in his relevant monograph. Quotations from works published later than these monographs, in so far as the works concerned have come to my attention, will, of course, be added in their proper place. However, keys to the classification, as well as distributional data, can be dispensed with in this publication, since these points are also covered in PILSBRY's monographs.

The photographs (Plate I *A-B* and III *D-E* excepted) were taken by Dr. WAGENAAR HUMMELINCK, with the assistance of Mr. H. VAN KOOTEN, at the Zoological Laboratory of the State University, Utrecht.

The localities have been described in *Studies Fauna Curaçao* 2, 1940 (p. 22-42), and 4, 1953 (p. 3-19), or will be dealt with in a forthcoming volume in this series.

The greater part of the material has been presented to the Zoölogisch Museum of Amsterdam and the Rijksmuseum van Natuurlijke Historie, Leiden.

VERTIGINIDAE

Bothriopupa tenuidens (C. B. Adams)

Plate I C

PILSBRY, 1917, p. 299, pl. 29 figs. 5-7, 11-13. HUMMELINCK, 1940, p. 96 (Margarita, 1936). RICHARDS & HUMMELINCK, 1940, p. 11 (same material). ARIAS, 1955, p. 161-162, fig. 6.

TRINIDAD: *Monos*, sta. 578, 10.I.1955.

MARGARITA: Near La Asunción, 250-300 m, sta. 145, 146, 3.VII.1936.

KLEIN CURAÇAO: Cast ashore, sta. 321, 1.X.1948.

This species is also known from several of the Greater Antilles, and from the mainland of Venezuela.

Bothriopupa conoidea (Pfeiffer)

PILSBRY, 1917, p. 231, pl. 28 figs. 7-8, 11. ARIAS, 1955, p. 163.

This species was not represented in the material I had to hand; it is, however, known from Demerara (British Guiana), and from near Caripito (state of Sucre, Venezuela).

Sterkia (Metasterkia) antillensis (Pilsbry)

PILSBRY, 1920, p. 53, pl. 6 figs. 8-11. ARIAS, 1955, p. 164-166, figs. 7a, b.

Originally described from Cuba and Jamaica, this species has also been recorded from the mainland of Venezuela; ARIAS reports it from Tocuyito and San Juan de los Morros, both localities in northern Venezuela. The material collected by HUMMELINCK did not contain the species which, without doubt, is nevertheless to be discovered in some of the localities visited by him.

Pupoides (Pupoides) marginatus nitidulus (Pfeiffer) Plate I D-I

PILSBRY, 1921, p. 110-114, pl. 12 fig. 8. RICHARDS & HUMMELINCK, 1940, p. 11 (Margarita, 1936). — *Pupoides marginatus*, PILSBRY, 1926, p. 249. HUMMELINCK, 1940, p. 96 (1930-1937 material); 1940a, p. 116; 1940b, p. 353. — *Pupoides* sp. ?, BAKER, 1924, p. 75. — *Pupoides nitidulus*, ARIAS, 1955, p. 158-159. — *Pupoides simoni*, BAKER, 1923, p. 5.

While *Pupoides simoni* Jousseaume, originally described from Venezuela, is doubtless a synonym of the species to be treated here, the valid name of this species still appears to be open to discussion. The question to be answered is, basically, whether this form should be considered as the typical *marginatus* Say, as represented on the North American mainland; or as its local subspecies *nitidulus* Pfeiffer; or, finally, whether this last name should not be given specific rank. In my opinion it is still safest to use the trinomial name.

DOG ISLAND: Sta. 488, 17.VI.1949.

ANGUILLA: *Upper Prickly Pear Island*, sta. 486, 17.VI.1949. Forest Point 482, 18.VI.1949. Sandy Ground, 484, 16.VI.1949; 485, 16.VI.1949.

ST. MARTIN: Top of Meschrine Hill (Corner Hill), 110 m, sta. 472, 27.V.1949. Foot of Meschrine Hill, 473, 27.V.1949. Point Blanche, 458, 17.V.1949.

TINTAMARRE: Sta. 455, 20.VI.1949.

LA FOURCHE: Sta. 453, 2.VI.1949.

ST. EUSTATIUS: Toby Gut, sta. 423, 14.VII.1949. Big Gut, 424, 6.VII.1949.

Top of White Wall, 270 m, 425, 6.VII.1949. Near Oranjestad, 432, 11.VII.1949.

ST. CHRISTOPHER: Limestone cliff of Brimstone Hill, 21.VII.1955, sta. 605.

NEVIS: Mosquito Bay, sta. 415, 28.VI.1949.

BARBUDA: Highlands, sta. 598, 599, 6.VII.1955. Codrington Village, 602, 11.VII.1955.

BLANQUILLA: Valuchu, sta. 171, 21.VII.1936.

TORTUGA: Southwestern part, sta. 173, 1.VIII.1936.

ORCHILA: Southwest Huespén, sta. 175, 23.VII.1936.

BONAIRE: Pos Baca, near sta. 185, 14.XI.1936. Near Spelonk, 187a, 15.IV.

1955. Fontein, 191, 30.III.1937. Lagoen, 308, 14.IX.1948. Onima, 312, 19.IX.1948. Goto, 315, 22.II.1949. Boca Slagbaai, 317, 12.IX.1948.

KLEIN BONAIRE: Near salinja, sta. 320, 7.IX.1948.

KLEIN CURAÇAO: Cast ashore, sta. 321, 1.X.1948.

CURAÇAO: Seroe Domi, sta. 213A, 12.IV.1930. In front of cave of Hato, 217, 17.IX.1936. Seroe Cabajé, 225a, 14.IV.1930. Seroe di Cueba, 227, 30.IV.1930; 29.IV.1948. Bullen Baai, 341, 22.X.1948, Martha Koosje, 344, 24.VIII.1948. Seroe Baha So, 353, 16.II.1949. Playa Frankie, 560, 27.II.1955. Parera, near Willemstad, 12.III.1955.

ARUBA: Rooi Prins, sta. 246a, 26.VIII.1949. Rooi Spoki, 255, 6.II.1937. Savaneta, 256, 5.I.1937. Rooi Francés, 263, 6.I.1937. Heintje Croes, 276, 14.XII.1936. Mon Plaisir, 277, 15.XII.1936. Eagle Colony, 1.V.1955.

LA GOAJIRA: North-east of Rio Hacha, sta. 292, 20.I.1937. South of Rio Hacha, 293, 294, 18.I.1937.

PARAGUANÁ (state of Falcón): Carirubana, sta. 279, 15.II.1937. Moruy, 283, 18.II.1937.

N E VENEZUELA, MAINLAND: Guanta (state of Anzoátegui), sta. 122, 15.VIII.1936.

Recorded by HUMMELINCK (1940) from MARGARITA, Punta Ausenta, sta. 132, and Puerto Santo, near Carúpano (State of Sucre), 125.

Little if any variation is shown by the rich material studied. The specimens from Moruy, on the Paraguaná Peninsula are remarkable, since they are provided with an estivation diaphragm not seen in any specimen from other localities.

Pupoides (Pupoides) modicus (Gould)

PILSBRY, 1921, p. 115-116, pl. 12 figs. 13-15; 1948, p. 923-924, fig. 499.

CAT KEY, south of Bimini group, Bahamas: Sta. 499, at base of coconut tree, 21.VIII.1949.

This species is apparently very rare on the mainland of America, since almost all the localities listed are situated on islands: the island of St. Simons, off the coast of Georgia; some of the Florida keys; and the Bimini group, in the Bahamas. It also seems to occur on the mainland of Florida, but close to the coast.

Gastrocopta (Gastrocopta) barbadensis barbadensis (Pfeiffer) Plate II A-F

PILSBRY, 1916, p. 83-85, pl. 18 figs. 1-5; 1926, p. 200. ARIAS, 1955, p. 147-148. — *Gastrocopta barbadensis*, HUMMELINCK, 1940, p. 95 (Curaçao material excepted); 1940a, p. 115-116; 1940b, p. 353-354. RICHARDS & HUMMELINCK, 1940, p. 10.

ST. JOHN, Virgin Islands: Catherineberg, 300 m, sta. 620, 19.IV.1955.

DOG ISLAND: Sta. 487, 488, 17.VI.1949.

ANGUILLA: Upper Prickly Pear Island, sta. 486, 17.VI.1949. Forest Point,

482, 18.VI.1949. Long Bay, 483, 18.VI.1949. Sandy Ground, 484, 485, 16.VI.1949.

ST. MARTIN: Old Battery Hill, sta. 299, 17.III.1937. Point Blanche, 458, 459, 460, 17.V.1949. Old Battery, 461, 18.V.1949. Experiment, 465, 25.V.1949. Cole Bay Hill, 100 m, 470, 8.VIII.1949. Lay Bay, 471, 27.V.1949. Top of Meschrine Hill (Corner Hill), 110 m, 472, 27.V.1949. Foot of Meschrine Hill, 473, 27.V.1949. Devils Hole, foot of Meschrine Hill, 474A, 26.VII.1955. Flamingo Pond, 475, 8.VI.1949. *Little Key* island, Simson Bay lagoon, 478, 2.VIII.1949. Great Saltpond, 19.V.1949.

TINTAMARRE: Sta. 455, 20.VI.1949.

LA FOURCHE: Sta. 452, 453, 2.VI.1949.

ST. BARTHÉLEMY: Gustavia, sta. 450, 1.VI.1949.

SABA: Road to Bottom, sta. 298A, 19.VII.1949.

ST. EUSTATIUS: Big Gut, sta. 424, 6.VII.1949. Top of White Wall, 270 m, 425, 6.VII.1949. Near White Wall, 426, 6.VII.1949.

ST. CHRISTOPHER: Top of Brimstone Hill, 250 m, sta. 421, 30.VI.1949. Foot of Brimstone Hill, 422, 30.VI.1949. Limestone cliff South-east of Brimstone Hill, 605, 21.VII.1955.

NEVIS: Jessops Village, sta. 414, 28.VI.1949. Mosquito Bay, 415, 28.VI.1949. Jones' River, 416, 28.VI.1949.

BARBUDA: Highlands, sta. 599, 6.VII.1955.

ANTIGUA: Friars Hill, sta. 594, 16.VII.1955.

GRENADA: Point Salines, sta. 586, 26.I.1955.

LOS TESTIGOS: *Morro de la Iguana*, 100 m, sta. 157, 158, 14.VI.1936. *Tamarindo*, 150-200 m, 162, 16.VI.1936.

LOS FRAILES: *La Pecha*, sta. 168, 19.VI.1936.

MARGARITA: Cerro de Marmoleta, 150 m, sta. 139, 13.V.1936. Hill near La Asunción, 250 m, 146, 3.VII.1936. Toma de Agua del Encañado, 150 m, 150, 13.VII.1936.

LOS HERMANOS: Morro Pando, 200 m, sta. 170, 20.VII.1936.

BLANQUILLA: North of Valuchu, sta. 171, 21.VII.1936.

ORCHILA: Southwest Huespén, sta. 175, 23.VII.1936.

LA GOAJIRA: Uribia, sta. 288, 17.I.1937. North-east of Rio Hacha, 292, 20.I.1937. South of Rio Hacha, 293, 294, 18.I.1937.

PARAGUANÁ: Santa Fé, sta. 282, 18.II.1937. Moruy, 283, 18.II.1937.

Gastrocopta (Gastrocopta) barbadensis *hojeda* Pilsbry Plate II G-J

PILSBRY, 1926, p. 206, fig. 8, 8a. — *Gastrocopta barbadensis*, HUMMELINCK, 1940, p. 95 (Curaçao material only); 1940a, p. 115-116; 1940b, p. 354.

HUMMELINCK (1940, p. 95) writes "The var. *hojeda* Pilsbry of *G. barbadensis* could not be maintained." I cannot agree with him in this, and am treating the form concerned as a local race of *barbadensis* proper, fully realizing, however, that the similarities between the two are great.

CURAÇAO: Cave of Newport, sta. 208, 2.IX.1936. Kabrietenberg, 210, 16.X.1936. Jack Evertszberg, 214, 10.X.1936. Hofje Hato, 216, 13.X.1936. In front of cave of Hato, 217, 17.IX.1936. Koenoeckoe Abau, 222a, 20.VIII.1948. Seroe

Cabajé, 225a, 14.IV.1930. Seroe Christoffel, 235A, 23.XII.1948. Rooi Sánchez, 190 m, 236, 11.XI.1936. Hofje Groot St. Joris, 323A, 9.IV.1949. Hofje Groot Piscadera, 334, 337, 27.I.1949. Hofje Groot St. Martha, 356, 4.XII.1948. Boca di Leeuw, Hofje Hato, 13.X.1936.

This geographical race, which replaces the nominate race on the Dutch islands of the Leeward Group, has not yet been found on Aruba, Bonaire, or on the Venezuelan islands.

Gastrocopta (Gastrocopta) curacoana Pilsbry Plate III D-O

PILSBRY, 1926, p. 202–204, figs. 1–4a. HUMMELINCK, 1940, p. 95; 1940a, p. 116–117, 120, 124. ARIAS, 1955, p. 152–153. — *Pupa longurio* CROSSE, 1872, p. 158; 1873, p. 42, pl. 1 fig. 2 (non *Pupa longurio* Moquin-Tandon, 1855). — *Gastrocopta longurio*, PILSBRY, 1916, p. 82, pl. 15 fig. 8.

BLANQUILLA: Valuchu, sta. 171, 21.VII.1936. El Jaque, 172, 22.VII.1936. Playa del Jaque, 172A, 172B, 22.VII.1936.

TORTUGA: Southwest Tortuga, sta. 173, 1.VIII.1936.

BONAIRE: Lima, 184, 14.XI.1936; 305, 5.IX.1948. Pos Baca, near 185A, 14.XI.1936. Spelonk, 187, 24.III.1937; 187a, 15.IV.1955. Fontein, 190a, 11.IX.1948; 190A, 20.V.1930; 191, 30.III.1937. Hofje Fontein, 193A, 11.IX.1948. Tanki Onima, 194, 13.XI.1936. Punt Vierkant, 304, 5.IX.1948. Lagoen, 308, 14.IX.1948. Boca Onima, 312, 19.IX.1948. Pos Dominica, 313, 15.IX.1948. Goto, 315, 22.II.1949. Slagbaai, 317, 12.IX.1948. Zuidpunt, 23.III.1949. Pos Soedestsoed, Witte Pan, 21.IX.1948. Pos Baca Grandi, 2.IX.1949. Pos Ichi, 30.IX.1930; 31.III.1937. West Bonaire, 25.III.1949. Riscado, Goto, 26.VIII.1930; 2.IX.1949. Salinja Tam, 23.XI.1930. Salinja Bartool, 30.VIII.1932 (H.B.C. Schotborgh coll.).

KLEIN BONAIRE: Southeastern part, sta. 199, 15.XI.1936; 199b, 14.V.1930; 199c, 7.IX.1949. Salinja, 320, 7.IX.1948. Pos di Cas, near 199, 17.X.1930; 17.V.1936; 7.IX.1948. S.E. part, 328, 10.IV.1949.

CURAÇAO: Seroe Ronde Klip, 125 m, sta. 201, 20.X.1936. Seroe di Boca, St. Joris, 202, 7.IX.1936. Oost Seinpost, 204, 9.IX.1936. Rooi Manzanienja, Sta Barbara, 205a, 13.IV.1949. Tafelberg, Sta Barbara, 150 m, 206, 4.IX.1936; 18.IV.1949. Kabrietenberg, 210, 16.X.1936. Schaarloo, 212, 26.X.1936. Seroe Pretoe, 213, 9.X.1936. Jack Evertszberg, 214, 10.X.1936. Seroe Spreit, 215, 23.X.1936. In front of Cave of Hato, 217, 17.IX.1936. Cave of Hato, 218, 21.IX.1936; 7.III.1949. Koenoeke Abau, 222a, 20.VIII.1948. Seroe di Cueba, 227a, 30.IV.1930. Seroe di Cueba, 228, 29.X.1936. Top of Seroe Christoffel, 340 m, 234, 7.III.1937. Seroe Christoffel, 200 m, 235, 10.XI.1936. Rooi Sánchez, 190 m, 236, 11.XI.1936. Seroe Djerimi, 242, 242A, 6.XI.1936. St. Kruis Baai, 243, 24.X.1936. Hofje St. Kruis, 245, 24.X.1936. Hofje Groot St. Joris, 323, 323B, 9.IV.1949. Tafelberg, Sta Barbara, 140 m, 328, 10.IV.1949. Hofje Groot Piscadera, 337, 339A, 27.I.1949. Bullen Baai, 341, 22.X.1948. Kleine Berg, 343, 24.VIII.1948. Martha Koosje, 344, 24.VIII.1948. Dokterstuin, 346, 12.II.1949. Rooi Cajoeda, Knip, 350, 17.VIII.1948. Rooi Beroe, Savonet, 351, 23.XII.1948. Seroe Baha So, 115 m, 353, 16.II.1949. St.

Joris Baai, 558, 20.II.1955. Piscadera Baai, 10.X.1936. St. Michiels Baai, 30.VII.1932 (Brother M. Realino coll.). Western Hato, 7.III.1949. San Pedro, 13.II.1949. Rooi Beroe, 10.XI.1936. Rooi Sánchez, 11.XI.1936. Seroe Commandant, 24.IX.1930.

ARUBA: Rooi Prins, sta. 246, 9.I.1937; 246a, 26.VIII.1949. Near Fontein, 248A, 5.VII.1930. Quadirikiri, 249, 9.II.1937. Cave of Quadirikiri, 250, 9.II.1937. Culebra, Seroe Colorado, 254, 5.I.1937. Rooi Spoki, 255, 6.II.1937. Rooi Lamoenchi, 257, 29.XII.1936. Baranco Alto, 260, 29.XII.1936. West of Spaansch Lagoen, 262B, 19.I.1949. Rooi Francés, 263, 6.I.1937. Hooiberg, 268B, 5.XII.1936. Solito, 275, 16.XII.1936. Heintje Croes, 276, 14.XII.1936. Bucuti, 278A, 363, 17.I.1949. Sabana Blancoe, E of Oranjestad, 362, 31.XII.1948. Pos di Noord, 30.XII.1936.

N E VENEZUELA, MAINLAND: Puerto Santo, E of Carúpano (state of Sucre), sta. 125, 12.VI.1936.

The localities on Blanquilla, Tortuga, and on the Venezuelan mainland (Sucre) constitute new records for this species, which was previously known only from Curaçao, Aruba and Bonaire.

No good picture of *Pupa longurio* Crosse has ever yet been given — that of PILSBRY, 1916, pl. 15 fig. 8, is a copy of the original one by CROSSE. Accordingly, I present here photographs of the type specimen, which were provided by Dr. A. FRANC of the Muséum National d'Histoire Naturelle in Paris, with his customary kindness. There is no longer any possibility of doubting the identity of CROSSE's species with *curacoana* Pilsbry.

Gastrocopta (Gastrocopta) octonaria Pilsbry Plate II L-O

PILSBRY, 1926, p. 204–205, figs. 5, 5a, 6, 7, 7a. ARIAS, 1955 p. 154. — *Gastrocopta octonaria*, HUMMELINCK, 1940, p. 96; 1940a, p. 115–116; 1940b, p. 353–354.

LOS HERMANOS: *Morro Fondadero*, sta. 169, 20.VII.1936.

ORCHILA: Huespén, sta. 174, 23.VII.1936.

BONAIRE: Lima, sta. 184, 14.IX.1936. Punt Vierkant, 304, 5.IX.1948. Lagoen, 308, 14.IX.1948. Boca Onima, 312, 19.IX.1948. Oeroesjan Blanco, Colombia, 3.IX.1948.

KLEIN BONAIRE: Southeastern part, sta. 199, 15.XI.1936.

CURAÇAO: Tafelberg, S. Barbara, 150 m, sta. 206, 4.IX.1936. Seroe Domi, 213A, 12.IV.1930. Top of Seroe Christoffel, 350 m, 234A, 11.II.1949. Seroe Christoffel, 200 m, 235, 10.XI.1936. Rooi Sánchez, 190 m, 236, 11.XI.1936. Hofje Santa Barbara, 327, 14.VIII.1948. Playa Frankie, 560, 27.II.1955. Koenoeke Hatoen, Hato, 15.X.1936. Parera, Willemstad, 12.III.1955.

ARUBA: Rooi Prins, sta. 246, 9.I.1937. Culebra, Seroe Colorado, 253, 5.I.1937. Heintje Croes, Oranjestad, 276, 14.XII.1936. *Bucuti*, 278, 8.II.1937.

Also recorded by HUMMELINCK (1940, 1940b) from *Morro Pando*, Los Hermanos, sta. 170: several other localities on Curaçao and Aruba, and from LA GOAJIRA, 293.

Originally mentioned (PILSBRY, 1926) only from the Dutch islands of the Leeward Group, the species was later recorded by HUMMELINCK (1940) from several Venezuelan islands, and even from the South American mainland (La Goajira). ARIAS (1955) has no further localities to add.

Gastrocopta (Gastrocopta) pellucida biminensis Pilsbry Plate III B-C

Gastrocopta pellucida form *biminensis* PILSBRY, 1916, p. 78, pl. 15 figs. 11-13.

SOUTH BIMINI, Bahamas: Sta. 497, 498, 20.VIII.1949.

CAT KEY (S of Bimini): Sta. 499, 21.VIII.1949.

In my opinion the form *biminensis* is a 'weak' subspecies of typical *pellucida*, may be owing to insular life conditions; it is, however, always recognizable.

Gastrocopta (Gastrocopta) pellucida hordeacella (Pilsbry) Plate III A

PILSBRY, 1916, p. 78-80, pl. 17 figs. 1-4, pl. 16; 1948, p. 913-915, fig. 494-495.

ST. THOMAS: Magens Bay, sta. 623, 20.VI.1955.

ST. CROIX: Fair Plain, sta. 611, 15.VI.1955.

DOG ISLAND: Sta. 489, 17.VI.1949.

ST. MARTIN: Point Blanche, sta. 606, 5.VI.1955.

NEVIS: Jessops Village, sta. 414, 28.VI.1949.

This subspecies has a wide distribution over the southern part of the United States, on both the Atlantic and Pacific sides, and has already been reported from the northern states of Mexico. It had never before been found on the Antillean islands, where only the nominate form, *pellucida* proper, is known to occur. I feel unable to identify the specimens found by Dr. HUMMELINCK with the nominate race, and consider them to belong to the subspecies *hordeacella*, whose southernmost outposts they would thus represent.

Gastrocopta (Gastrocopta) polyptyx Pilsbry Plate IV A-B

PILSBRY, 1916, p. 89, pl. 17 figs. 5-7.

ST. MARTIN: Point Blanche, sta. 458, 459, 460, 17.V.1949. Experiment, 465, 25.V.1949. Top of Meschrine Hill, 110 m, 472, 27.V.1949. Foot of Meschrine Hill, 473, 27.V.1949. Flamingo Pond, 477, 8.VI.1949. Great Saltpond, 19.V.1949. TINTAMARRE: Sta. 455, 20.VI.1949.

SABA: Road to Bottom, 200 m, sta. 298B, 19.VII.1949.

BARBUDA: Martello Tower, sta. 596, 8.VII.1955. Highlands, near Dark Cave, 598, 599, 6.VII.1955. Highlands, at Darby's Cave, 600, 10.VII.1955. Codrington Village, 603, 5.VII.1955.

ANTIGUA: Yepton Mill, sta. 595, 17.VII.1955.

This comparatively recently described species was formerly known only from the Bermudas, Jamaica, and from the island of St. Thomas. Accordingly the localities listed above all add to the known area of distribution of the species.

Group of *Gastrocopta (Gastrocopta) servilis* (Gould)

Besides the nominate form, *servilis* proper, several subspecific forms have been described which may be considered as geographical subspecies. However it is not possible in all cases to tell the forms described apart, since there are gradual transitions between them which make such a clear classification out of the question. For practical purposes I have retained the races or forms listed below, though in some cases, as for instance in that of the form from Saba, I am not sure that my identification will continue to be valid, after more material has been studied from there and from some of the neighbouring islands.

***Gastrocopta (Gastrocopta) servilis servilis* (Gould)**

Plate IV *F-H*

PILSBRY, 1916, p. 70-74, pl. 14 figs. 4-7. ARIAS, 1955, p. 148-149.

ST. JOHN: Chocolate Hole, sta. 618, 19.VI.1955.

ANGUILLA: *Upper Prickly Pear Island*, sta. 486, 17.VI.1949.

ST. MARTIN: Point Blanche, sta. 459, 17.V.1949. Cul de Sac, 469, 24.V.1949.

Cole Bay Hill, 100 m, 470, 8.VIII.1949. Great Saltpond, 19.V.1949.

TINTAMARRE: Sta. 454, 20.VI.1949.

LA FOURCHE: Sta. 453, 2.VI.1949.

ST. BARTHÉLEMY: Public, sta. 451, 4.VI.1949. Mar des Palmiers, Lorient, 3.VI.1949.

ST. EUSTATIUS: E of Oranjestad, sta. 297a, 16.VII.1949. Big Gut, White Wall, 424, 6.VII.1949. Top of White Wall, 270 m, 425, 6.VII.1949. Billy Gut, Oranjestad, 432, 11.VII.1949.

ST. CHRISTOPHER: Morne Hills, sta. 417A, 2.VII.1949.

BARBUDA: Highlands, sta. 598, 6.VII.1955. Goat Island, 601, 11.VII.1955. Codrington Village, 602, 11.VII.1955.

ANTIGUA: Friars Hill, sta. 594, 16.VII.1955.

This widespread species is known from Bermuda, the Greater Antilles, St. Thomas, St. John, St. Croix, St. Barts and Antigua, and, in addition, Central America from México to Panamá. It has been found in Venezuela, at the Río Macuto. HUMMELINCK's material provides new records from several Lesser Antillean islands.

***Gastrocopta (Gastrocopta) servilis riisel* (Pfeiffer)**

Plate IV *I-M*

PILSBRY, 1916, p. 74-75, pl. 14 figs. 8-9.

ST. CROIX: Upper Bethlehem, sta. 613, 14.VI.1955. Fredensborg, 615, 11.VI.1955.

ST. MARTIN: Devil's Hole, near Simson Bay, sta. 474a, 26.VI.1955. Mullet Pond Bay, 610, 27.VI.1955.

SABA: Road to Bottom, 200 m, sta. 298B, 19.VII.1949. Great Hill, 430 m, 444, 19.VII.1949.

BARBUDA: N of Codrington Village, sta. 602, 11.VII.1955. Codrington Village, 603, 5.VII.1955. Highlands at Pycrust well, 6.VII.1955.

ANTIGUA: Yepton Mill, sta. 595, 17.VII.1955.

TOBAGO: Store Bay, sta. 581, 17.I.1955. S of Airport, 582A, 17.I.1955.

ONAIRE: Fontein, sta. 191, 30.III.1937. Lagoen, 308, 14.IX.1948. Pos Ichi, Kralendijk, 21.II.1949. Rincón, 26.II.1949.

CURAÇAO: Hofje Hato, sta. 216, 13.X.1936. Seroe Christoffel, 200 m, 235, 10.XI.1936. Hofje Groot St. Joris, 323B, 9.IV.1949. Hofje Groot Piscadera, 334, 339A, 27.I.1949. Hofje Groot Santa Marta, 356, 4.XII.1948. Noordkant, 21.VIII.1948.

ARUBA: Eagle Colony, near Oranjestad, 1.V.1955.

Known originally only from St. Thomas and Jamaica. All the above-mentioned islands may now be added to the localities of this subspecies. As regards Curaçao, and Bonaire, I cannot explain why previous students of this region do not mention it as occurring there.

Gastrocopta (Gastrocopta) servilis oblonga (Pfeiffer)

PILSBRY, 1916, p. 90-92, pl. 17 figs. 9, 14-15. ARIAS, 1955, p. 149-150, fig. 4.

This subspecies, which has been found in Venezuela, in the Lake Valencia region, was not represented in HUMMELINCK's material.

Gastrocopta (Gastrocopta) rupicola rupicola (Say)

PILSBRY, 1916, p. 58-60, pl. 11 figs. 1-3, 5-6; 1948, p. 905-906, fig. 491.

CAT KEY, S. of Bimini: Sta. 499, 21.VIII.1949.

NEW PROVIDENCE: Pine Barrens, sta. 492, 22.VIII.1949.

This species, common in the southeastern states of the U.S.A., is also known to occur in Bermuda, and in the Bimini group in the Bahamas. We are pleased to be able to add two more Bahamian localities to those already known.

Gastrocopta (Gastrocopta) rupicola marginalba (Pfeiffer) Plate II K, V A-D

PILSBRY, 1916, p. 60-62, pl. 11 figs. 10-13, pl. 10 figs. 6, 8-9. ARIAS, 1955, p. 145-147, fig. 3.

ST. THOMAS: Brookman River, sta. 622, 17.VI.1955.

ST. CROIX: Upper Bethlehem, sta. 612, 14.VI.1955.

ST. CHRISTOPHER: Timothy Hill, Frigate Bay, sta. 604, 20.VII.1955. Limestone cliff near Brimstone Hill, 605, 21.VII.1955.

BARBUDA: Martello Tower, sta. 596, 8.VII.1955. River Quarter, near Bull Hole, 597, 9.VII.1955. Highlands, near Dark Cave, 598, 599, 6.VII.1955. Goat Island, 601, 11.VII.1955. N of Codrington Village, 602, 11.VII.1955. Highlands, near Bryant's Cave, 6.VII.1955.

ANTIGUA: Parham Hill, sta. 593, 14.VII.1955. Friars Hill, 594, 594A, 16.VII.1955.

TOBAGO: S of Airport, sta. 582, 17.I.1955.

LOS HERMANOS: Morro Fondeadero, sta. 169, 20.VII.1936.

First described from Cuba; this subspecies has also been found in Jamaica and Bermuda; only recently it has been recorded by ARIAS as occurring on the South American mainland, at Sanare, district of Jiménez (state of Lara), Venezuela. Accordingly, our records from the Hermanos islands and Tobago do not appear to be so isolated.

Gastrocopta (Geminidens) geminidens (Pilsbry) Plate IV E

PILSBRY, 1930, p. 351. ARIAS, 1955, p. 155-156. — *Gastrocopta geminidens*, PILSBRY, 1926, p. 228; HUMMELINCK, 1940, p. 95 (Margarita); HUMMELINCK 1940a, p. 116. RICHARDS & HUMMELINCK, 1940, p. 11. — *Bothriopupa geminidens* PILSBRY, 1917, p. 228-229, pl. 28 figs. 12-14. BAKER, 1925, p. 2.

TRINIDAD: St. Augustine, sta. 366, 8.VIII.1948.

MARGARITA: Base of Cerro del Piache, near El Valle, 100 m, sta. 140, 10.VII.1936. Toma de Agua del Valle, 250 m, 144, 4.VII.1936.

Described from the Venezuelan mainland by PILSBRY, this species was found there again by ARIAS (1955), at San Juan de los Morros (state of Guárico). HUMMELINCK (1940) has listed it from La Asunción, on Margarita island. Here, two more localities on Margarita are reported, as well as an astonishing new find of the species on Trinidad, B.W.I.

Gastrocopta (Immersidens) iheringi (Suter) Plate V E-I

PILSBRY, 1916, p. 101-102, pl. 17 fig. 16. ARIAS, 1955, p. 144-145. — *Gastrocopta iheringi*, HUMMELINCK, 1940, p. 95 (mainland material only); 1940a, p. 116; 1940b, p. 353-354 (p.p.). RICHARDS & HUMMELINCK, 1940, p. 11 (confused with following species).

TRINIDAD: *Chacachacare*, sta. 580, 11.I.1955.

LA GOAJIRA: N of Río Hacha, sta. 292, 20.I.1937. S of Río Hacha, 293, 294, 18.I.1937.

PARAGUANÁ: Near Carirubana, sta. 279, 15.II.1937.

N E VENEZUELA, MAINLAND: Puerto Santo, E of Carúpano (state of Sucre), sta. 125, 12.VI.1936.

The type of the species is a subfossil shell from Bollaxa, Rio Grande do Sul, Brazil. Since then, the species has been found in the form of recent specimens in

other parts of South America. HUMMELINCK lists it as occurring on Margarita, the Frailes and the Testigos islands, as well as on the mainland, in Venezuela and Colombia; RICHARDS & HUMMELINCK list it from Margarita, but all this island material probably belongs to the following new species.

***Gastrocopta (Immersidens) hummelincki* n.sp. Plate V J-N; Fig. 2**

Gastrocopta iheringi, HUMMELINCK, 1940, p. 95 (mainland material excepted); 1940a, p. 116 (p.p.); 1940b, p. 353-354. RICHARDS & HUMMELINCK, 1940, p. 11.

Type. Chicago Natural History Museum No. 65270, from the Basa del Piache, S E of El Valle, Margarita island, Venezuela; collected by P. WAGENAAR HUMMELINCK, after whom this new species is named, on July 10, 1936; sta. 140, under coarse debris of marble schists, among plant decay, about 100 m up, in a valley at the northeastern foot of the Cerro del Piache.

Diagnosis. A species of the subgenus *Immersidens* of the vertiginid genus *Gastrocopta*, mostly characterized by the position of the united parietal and angular lamellae, which point obliquely toward the middle of the palatal margin and are twisted and slanting to the right, so that not only their edges but also their right sides can be seen in front view.

Comparisons. This new species is closely related to *Gastrocopta (Immersidens) iheringi* (Suter). Both show identical disposition of the armature of aperture; they differ greatly, however, in the shape and position of the parieto-angular lamellae. In *iheringi*, these lamellae stand almost vertically, so that only their edges and the spoon-shaped depression between them are visible in front view. In *hummelincki*, on the other hand, both the parietal and the angular lamellae stand in an oblique position to the longitudinal axis of the aperture, both pointing to the right, toward the middle of the palatal margin; they are, furthermore, slightly twisted and slanting to the right, so that their sides are visible, while the bottom of the depression between them is hidden in front view. In all other respects, the two species compared differ little, only quantitatively, so to speak; thus, *hummelincki* is more slender than *iheringi* and has more pronouncedly bulging whorls, whose number, by the way, is $5\frac{1}{4}$. The peristome is interrupted above in *hummelincki*, and its palatal side is straighter than in *iheringi*.

Description of type. Shell subcylindrical, slightly tapering above, thin, whitish; apex blunt. Whorls $5\frac{1}{4}$, rather swollen, minutely and irregularly striate; the

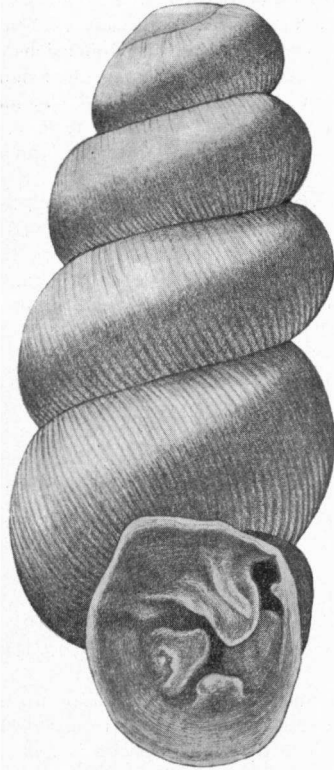


Fig. 2. *Gastrocopta (Immersidens) hummelincki* n.sp., holotype, from Margarita Island, Venezuela. (about $36 \times$ nat. size)

penultimate and the ultimate whorls are of almost equal diameter. Aperture about semi-elliptical, broadly rounded below, almost straight above, palatal side almost straight; peristome complete, expanded, adnate above, narrow at the right side, wider below, widest on the columellar side, the expansion hiding the narrow umbilical chink from frontal view. Twin lamella standing obliquely, its free end pointing to the middle of the palatal margin; it is twisted and slanting to the right, thus exposing its sides, which are distinctly excavated in their centres; the bottom of the depression between parietal and angular lamellae is therefore hidden from frontal view. Columellar lamella large, hook-shaped, its anterior portion horizontal, its inner portion curving downward, parallel to the axis; in frontal view, its outermost point reaches the left edge of the parietal lamella. Upper and lower palatal plicae high and shortly lamelliform; the basal fold is large, standing transversely within the aperture. — Length 2.4 mm, diameter 1.1 mm.

Remarks on paratypes. In addition to the type locality, the species is represented in other localities, which are listed below, in the islands of Margarita and Los Testigos. All the material was collected by P. WAGENAAR HUMMELINCK in 1936.

General remarks. While there is hardly any variation as far as the armature characters of the aperture are concerned, the dimensions of the shell vary quite a little, for instance, in the degree of slenderness, in the height of the shell, and in the number of whorls, which can be as large as 5½. — This *hummelincki* material was listed by the collector under *G. iheringi*, with some reserve, stating that his material from the latter species "proved to be very variable in form and size of teeth".

LOS TESTIGOS: *Tamarindo*, Morro Grande, sta. 162, 16.VI.1936.

MARGARITA: Morro de Robledar, Macanao, sta. 131, 27.V.1936. Alta Gracia, 120 m, 133, 14.V.1936. Foot of Cerro Guayamuri, 180 m, 136, 11.V.1936. El Cerrito, 120 m, 138, 27.V.1936. Cerro de Marmoleta, N. of Guatamare, 150 m, 139, 13.V.1936. Foot of Cerro del Piache, S.E. of El Valle, 100 m (type-locality), 140, 10.VII.1936. SW of La Asunción, 300 m, 145, 3.VII.1936.

Possibly also occurring on LOS FRAILES, according to HUMMELINCK's record of *G. iheringi* from *La Pecha*, sta. 168.

***Pupisoma (Ptychopatula) dioscoricola* (C. B. Adams) Plate 1A**

Pupisoma dioscoricola PILSBRY, 1948, p. 1007-1008, fig. 538. *Pupisoma dioscoricola insigne*, ARIAS, 1955, p. 160-161.

DOG ISLAND, Anguilla: Sta. 488, 17.VI.1949.

TRINIDAD: St. Augustine, sta. 366, 8.VIII.1948.

TORTUGA, Venezuela: Southwest part, sta. 173, 1.VIII.1936.

The specimens from Trinidad may not be of this species, and that from Tortuga is too young for decisive classification, but those from Dog I. are doubtless typical *dioscoricola*, with which I identify the subspecies *insigne* of PILSBRY, 1920, p. 39, listed by ARIAS.

Pupisoma (Ptychopatula) dioscoricola is widely distributed over the southern United States, Central America, the Antilles and the northern portion of South America.

I have listed *Pupisoma* here as a vertiginid and not as a vallonid, as THIELE, 1931, suggested.

***Pupisoma* (subgenus?) *minus* Pilsbry Plate 1B**

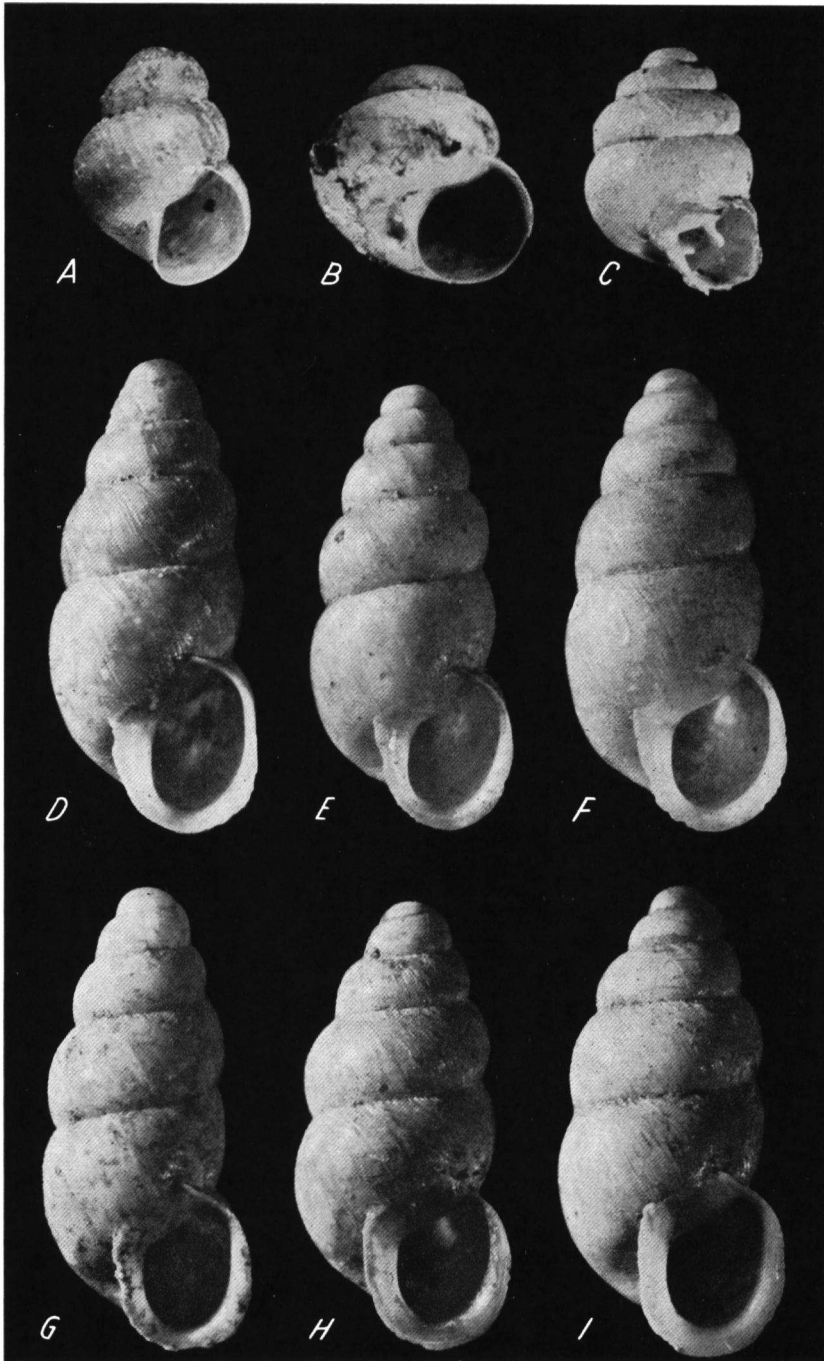
PILSBRY, 1920, p. 40-41, pl. 4 figs. 9, 11; 1948, p. 1008-1010, fig. 538.

ST. EUSTATIUS: Big Gut, near White Wall, sta. 424, 6.VII.1949.

As far as I know, this St. Eustatius record is the first record from the Lesser Antilles. The species — whose position within the genus *Pupisoma* is not quite clear — was described from Florida, where it is abundant, and has also been reported from Guatemala and Jamaica.

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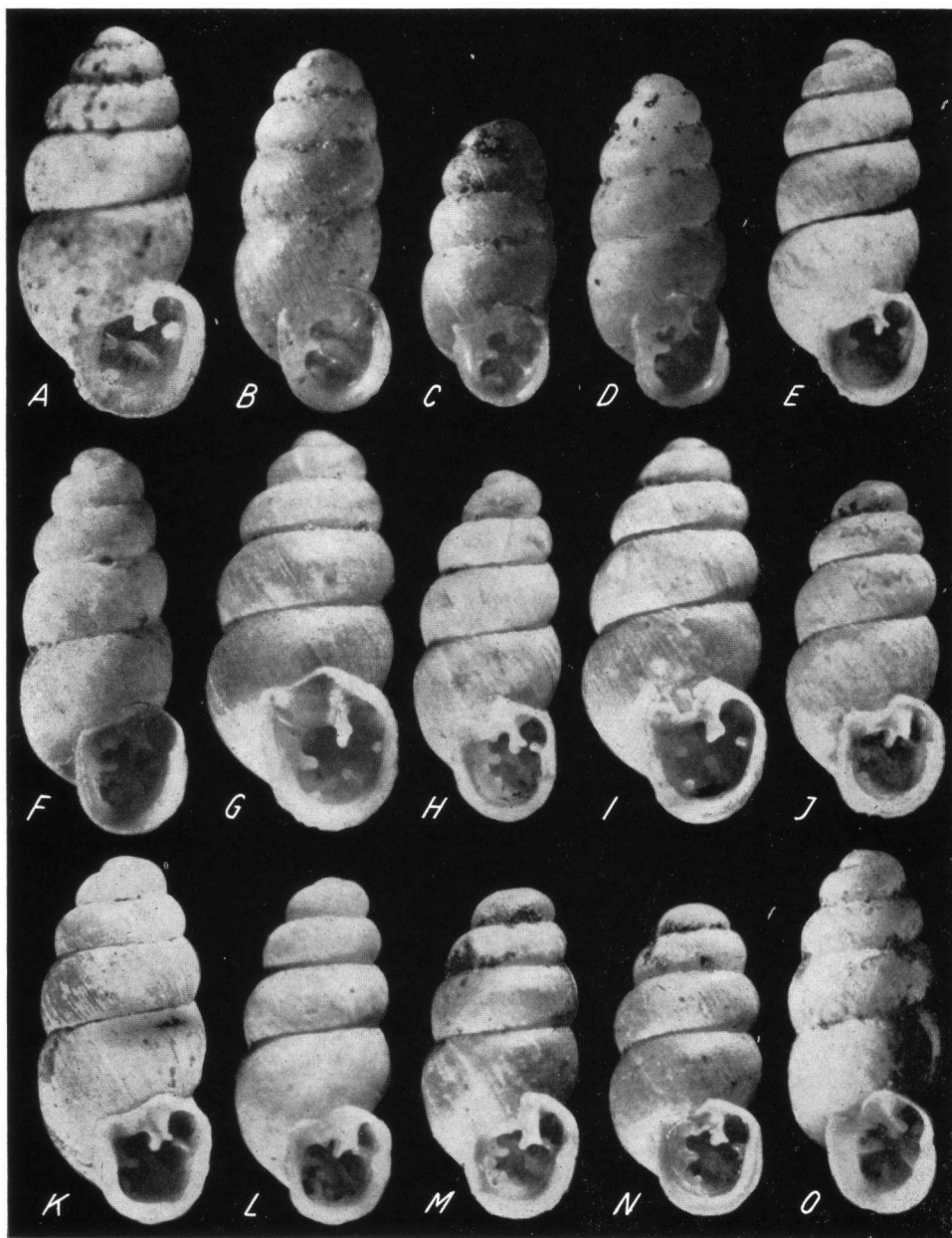
Pupisoma dioscoricola ($\times 20$) — A, ANGUILLA, Dog Island, sta. 488.

Pupisoma minus ($\times 20$) — B, ST. EUSTATIUS, sta. 424.

Bothriopuza tenuidens ($\times 22$) — C, TRINIDAD, Monos, sta. 578.

Pupoides marginatus nitidulus ($\times 15$) — D, ANGUILLA, sta. 485. E, ST. EUSTATIUS, sta. 423. F, BLANQUILLA, sta. 171. G, BONAIRE, sta. 312. H, CURAÇAO, sta. 560. I. LA GOAJIRA (Colombia), sta. 293.

PLATE II

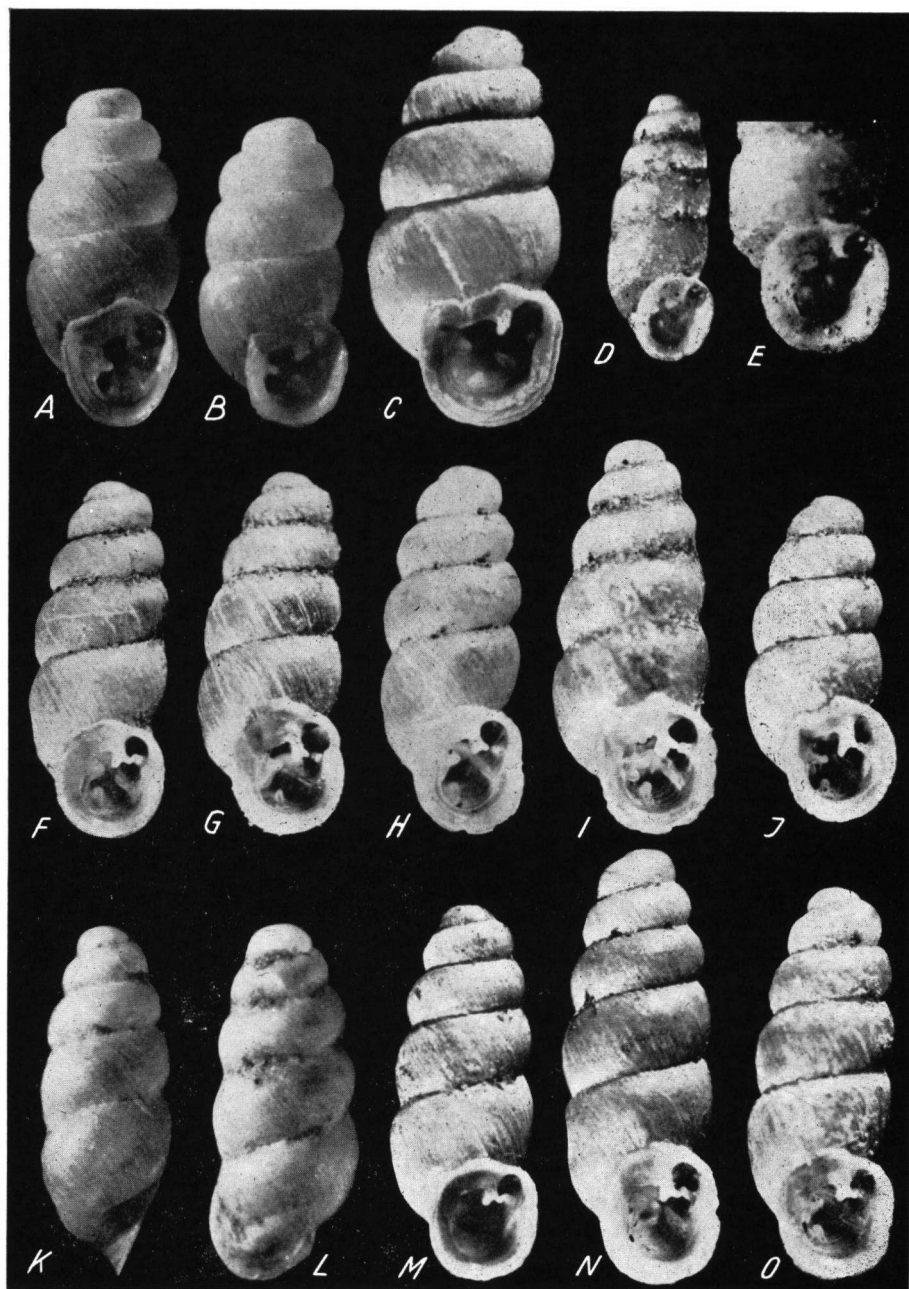


Gastrocopta barbadensis barbadensis ($\times 22$) — A, ST. MARTIN, sta. 471. B-C, ST. EUSTATIUS, sta. 424. D, BARBUDA, sta. 599. E, LA GOAJIRA (Col.), sta. 293. F, BLANQUILLA, sta. 171.

Gastrocopta barbadensis hojeda ($\times 22$) — G, CURAÇAO, sta. 216; H-J, sta. 334.

Gastrocopta rupicola marginalba ($\times 22$) — K, BARBUDA, sta. 602.

Gastrocopta octonaria ($\times 22$) — L, KLEIN BONAIRE, sta. 199. M, CURAÇAO, sta. 234A. N, ARUBA, sta. 278; O, sta. 276.

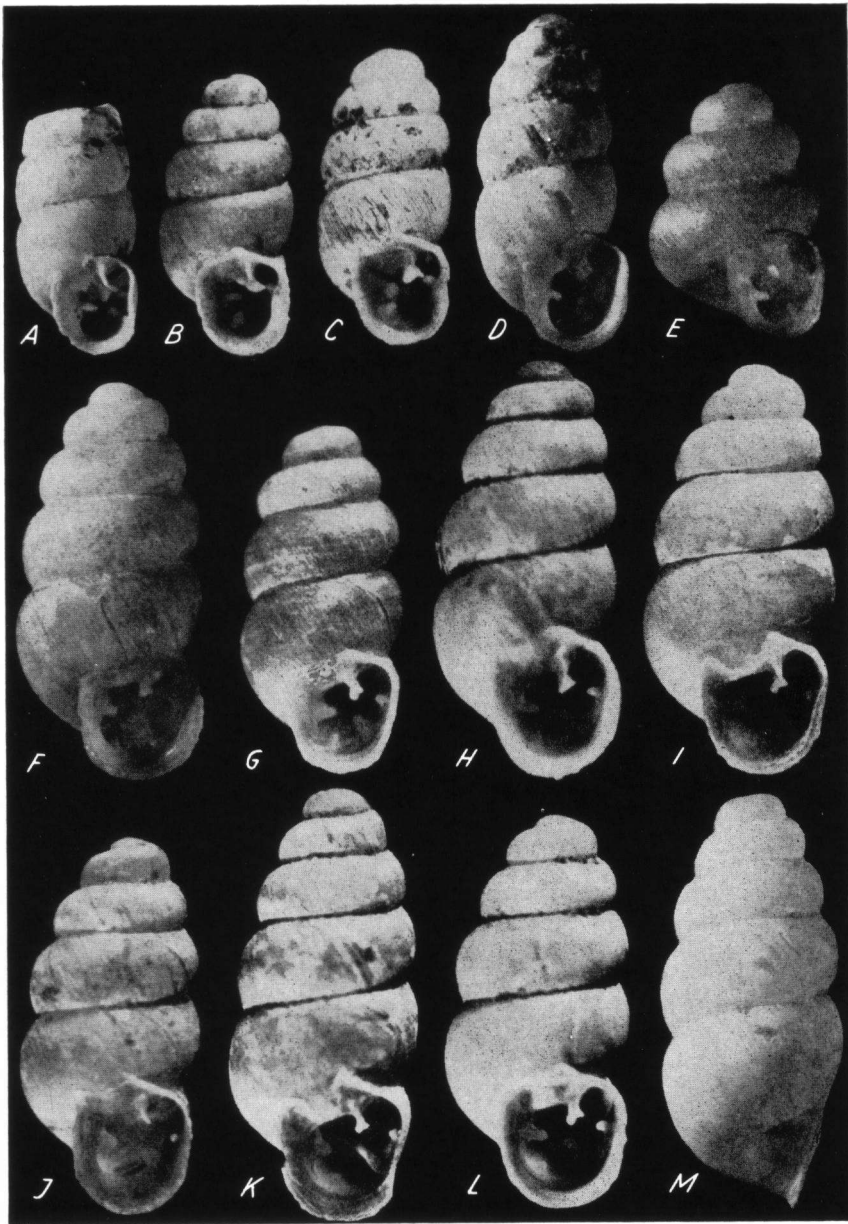


Gastrocopta pellucida hordeacella ($\times 22$) — A, ST. MARTIN, sta. 606. *Gastrocopta pellucida biminiensis* ($\times 22$) — B, S. BIMINI (Bahamas), sta. 497. C, CAT KEY (Bahamas), sta. 499.

"*Pupa Longurio* Crosse, Holotype", D ($\times 16$), E ($\times 25$).

Gastrocopta curacoana ($\times 22$) — F, BONAIRE, sta. 312. G, ARUBA, sta. 255; H, sta. 248A. I, CURAÇAO, sta. 205a; J-L, sta. 351. M, TORTUGA, sta. 173. N, BLANQUILLA, sta. 171. O, SUCRE (Venezuela), Puerto Santo, sta. 125.

PLATE IV



Gastrocopta polyptyx ($\times 22$) — A, ST. MARTIN, sta. 472; D, sta. 473. C, TINTAMARRE, sta. 455. D, SABA, sta. 298B.

Gastrocopta geminidens ($\times 22$) — E, TRINIDAD, sta. 366.

Gastrocopta servilis servilis ($\times 22$) — F, ST. JOHN, sta. 618. G, ST. EUSTATIUS, sta. 432. H, ST. KITTS, sta. 417A.

Gastrocopta servilis riisei ($\times 22$) — I, ST. CROIX, sta. 615. J, SABA, sta. 298B. K BARBUDA, sta. 603. L-M, CURAÇAO, sta. 216.



Gastrocopta rupicola marginalba ($\times 22$) — A, BARBUDA, sta. 599. B, ANTIGUA, sta. 593; C, sta. 594. D, LOS HERMANOS, MOTO FONDEADERO, sta. 169.
Gastrocopta iheringi ($\times 22$) — E-F, LA GOAJIRA (Col.), sta. 293; G, sta. 294. H, SUCRE (Ven.), Puerto Santo, sta. 125. I, TRINIDAD, Chacachacare, sta. 580.
Gastrocopta hummelincki ($\times 22$) — J-K, MARGARITA, sta. 138; L-N, sta. 140 (L = holotype).